



## Industrial Equipment Technology Skill Standards Checklist

### CERTIFICATION AREAS COMPLETED:

- \_\_\_\_\_ Industrial Safety
- \_\_\_\_\_ Blueprint Reading
- \_\_\_\_\_ Precision Measuring
- \_\_\_\_\_ Hand Tools and Fasteners
- \_\_\_\_\_ Metal Fabrication and Welding
- \_\_\_\_\_ Industrial Electricity
- \_\_\_\_\_ Hydraulics *or* Pneumatics
- \_\_\_\_\_ Mechanical Power Transmission,  
Bearings and Lubrication
- \_\_\_\_\_ Core Abilities
- \_\_\_\_\_ A minimum of 450 work hours

Student Name \_\_\_\_\_

School District \_\_\_\_\_

YA Consortium \_\_\_\_\_

YA Coordinator \_\_\_\_\_

High School Diploma/GED/HSED

Date Received \_\_\_\_\_

**Total Hours  
Employed**

**Company Name**

**Phone #**

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

## **Instruction for the Worksite Mentor**

The Skill Standards Checklist is a list of competencies (tasks) to be achieved through mentoring at the worksite.

- Each Industrial Safety competency has 2 levels, all other competencies have three levels.
- The worksite mentor should rate each competency as the student acquires and demonstrates the skill.
- A competency may be revisited and the score raised as the student becomes more proficient at the worksite.
- The mentor and the student should go over the checklist together on a regular basis (at a minimum every 9 weeks) to record progress and plan future steps to complete the required competencies.

***Please sign this page if you have been a mentor, trainer or instructor of this student.***

**CERTIFICATION:** I certify that this student has successfully completed the competencies required in my department.

_____	<b><i>Mentor/Trainer Signature</i></b>	_____	Printed Name
_____	Department	_____	Date Signed
_____	<b><i>Mentor/Trainer Signature</i></b>	_____	Printed Name
_____	Department	_____	Date Signed
_____	<b><i>Mentor/Trainer Signature</i></b>	_____	Printed Name
_____	Department	_____	Date Signed
_____	<b><i>Mentor/Trainer Signature</i></b>	_____	Printed Name
_____	Department	_____	Date Signed
_____	<b><i>Mentor/Trainer Signature</i></b>	_____	Printed Name
_____	Department	_____	Date Signed
_____	<b><i>Instructor Signature</i></b>	_____	Printed Name
_____	Department	_____	Date Signed
_____	<b>Instructor Signature</b>	_____	Printed Name
_____	Department	_____	Date Signed

# Industrial Safety

# Required

To actively participate in this program, the student must satisfy and consistently display the following competencies at the worksite.

## RATING:

**2 = Consistently displays this behavior.**

**1 = Often displays this behavior.**

		<u>Score</u>	
1.	Maintain a clean and safe work environment	2	1
2.	Use material safety data sheets (MSDS)	2	1
3.	Demonstrate correct lifting procedures	2	1
4.	Locate emergency exits in the facility	2	1
5.	Follow lock-out tag-out procedures	2	1
6.	Identify and properly uses machine guarding devices	2	1
7.	Define blood borne pathogens	2	1
8.	Demonstrate safe tool use	2	1
9.	Locate fire safety equipment	2	1
10.	Follow procedures for treating and reporting injuries and accidents	2	1
11.	Dispose of hazardous waste according to standards and company policy	2	1
12.	Follow all safety procedures required by the organization	2	1
<b>Retrieve safety information from appropriate sources</b>			
13.	Access safety information from sources available at the worksite, which could include computers, safety manuals or other sources.	2	1
14.	Locate material safety data sheet (MSDS) information	2	1
15.	Become familiar with the various components of the material safety data sheet (MSDS) in order to identify a chemical and it's hazards by reading the product label, etc.	2	1
16.	Identify proper personal protective equipment (PPE) for a task using the material safety data sheet (MSDS)	2	1

\_\_\_\_\_ # of items completed with a 2 rating (16 required)

**Comments:** \_\_\_\_\_

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# Print Reading

## RATING:

**3 = Moderately Skilled – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)**

**2 = Limited Practice – has practiced job during training program, additional training is required to develop skill. (Entry Level)**

**1 = Exposure Only – general information provided with no practice time, close supervision needed and additional training required.**

### Interpret technical drawing

### Score

*1.	Distinguish between appropriate views (such as orthographic views, section views, auxiliary views and detail drawings)	*3	2	1
*2.	Determine the scale of the view	*3	2	1
3.	Relate specific part features in different views of the part	3	2	1
4.	Determine the purpose of special views in industrial applications	3	2	1

### Interpret assembly drawings

5.	Determine the purpose of the drawing in an industrial application	3	2	1
*6.	Determine the major components of the assembly	*3	2	1
7.	Determine the relationship of one part to another in the assembly	3	2	1
8.	Summarize assembly specifications	3	2	1

### Interpret part dimensions and tolerances

*9.	Determine the method of dimensioning used	*3	2	1
*10.	Determine whether a measurement falls within the given tolerance for a specific dimension	*3	2	1

### Extract information from a title block

*11.	Determine the scale of the drawing	*3	2	1
12.	Determine the part number, part name, material used	3	2	1
13.	Determine general information about the part	3	2	1
14.	Determine the file name used to get the drawing	3	2	1

### Extract information from a change block

15.	Determine the progression of changes from the original drawing to the most recent revision of the print	3	2	1
16.	Define change block symbols and notations	3	2	1
17.	Match change block components with actual drawing features	3	2	1

**Interpret shop notes and symbols**

18.	Summarize all key information designated by notes and symbols	3	2	1
19.	Describe special conditions for part features	3	2	1
20.	Define commonly used abbreviations	3	2	1

**# of items completed with a 1 or higher rating \_\_\_\_\_ (20 required)**

**# of items completed with a 2 or higher rating \_\_\_\_\_ (16 required)**

**Note: all \* items must be completed at a 3 rating**

**Comments:** \_\_\_\_\_

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# Precision Measurement

## RATING:

**3 = Moderately Skilled** – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)

**2 = Limited Practice** – has practiced job during training program, additional training is required to develop skill. (Entry Level)

**1 = Exposure Only** – general information provided with no practice time, close supervision needed and additional training required.

Precision Measurement	<u>Score</u>		
1. Use precision measurement techniques and instruments.	3	2	1
2. Demonstrate proper use and function of the instruments.	3	2	1
3. Care for and store instruments properly.	3	2	1
4. Select the appropriate measurement tool for the given part feature.	3	2	1
5. Consider the degree of precision required by the part feature tolerance.	3	2	1
6. Verify that the measuring instruments have been calibrated to the standard reference.	3	2	1
7. Verify that the measuring instruments are clean and free of damage.	3	2	1
*8. Ensure the measurements are accurately recorded.	*3	2	1
<b>Take measurements with tape measures and steel rules</b>			
*9. Interpret measurement readings correctly.	*3	2	1
*10. Read a tape measure/steel rule to 1/16".	*3	2	1
*11. Make length measurements to the required tolerance.	*3	2	1
*12. Make area measurements to the required tolerance.	*3	2	1
<b>Take measurement with micrometers</b>			
13. Identify different types of micrometers and their parts.	3	2	1
14. Select the correct micrometer for the application.	3	2	1
15. Take measurements with a micrometer within given specifications.	3	2	1
<b>Take measurement with calipers</b>			
*16. Select the correct caliper for an application.	*3	2	1
*17. Interpret readings to within required accuracy.	*3	2	1
*18. Take measurements within given specifications.	*3	2	1

**Take measurement with indicators**

*19.	Take and interpret readings to within required accuracy.	*3	2	1
*20.	Select the correct indicator(s) for an application.	*3	2	1
*21.	Select correct attachment for an application.	*3	2	1
*22.	Connect the attachment according to requirements of the job.	*3	2	1

**# of items completed with a 1 or higher rating \_\_\_\_\_ (22 required)**

**# of items completed with a 2 or higher rating \_\_\_\_\_ (18 required)**

**Note: all \* items must be completed at a 3 rating**

**Comments:** \_\_\_\_\_

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# Hand Tools and Fasteners

## RATING:

**3 = Moderately Skilled** – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)

**2 = Limited Practice** – has practiced job during training program, additional training is required to develop skill. (Entry Level)

**1 = Exposure Only** – general information provided with no practice time, close supervision needed and additional training required.

## Use Common Hand Tools

## Score

- |   |    |   |   |
|---|----|---|---|
| *1. Distinguish between common hand tools including hammers, wrenches, pliers, punches, taps and dies, etc. | *3 | 2 | 1 |
| *2. Select the appropriate hand tool for the job.   | *3 | 2 | 1 |
| *3. Follow established safety procedures.   | *3 | 2 | 1 |
| *4. Use hand tools according to established guidelines.   | *3 | 2 | 1 |

## Install Mechanical Fasteners

- |  |    |   |   |
|--|----|---|---|
| *5. Distinguish between screw thread types and sizes.                                      | *3 | 2 | 1 |
| *6. Select the appropriate fastener for the application.                                   | *3 | 2 | 1 |
| *7. Follow established safety procedures.  | *3 | 2 | 1 |
| 8. Install various fasteners according to technical instructions and/or standard practice. | 3  | 2 | 1 |
| *9. Use the correct tools to install mechanical fastener.                                  | *3 | 2 | 1 |

\_\_\_\_\_ # of items completed with a 1 or higher rating (9 required)

\_\_\_\_\_ # of items completed with a 3 rating (8 required)

**Note: all \* items must be completed at a 3 rating**

**Comments:** \_\_\_\_\_

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# Metal Fabrication and Welding

## RATING:

**3 = Moderately Skilled – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)**

**2 = Limited Practice – has practiced job during training program, additional training is required to develop skill. (Entry Level)**

**1 = Exposure Only – general information provided with no practice time, close supervision needed and additional training required.**

### Perform Metal Cutting Operations

#### Score

1.	Interpret technical drawings	3	2	1
*2.	Follow established safety procedures.	*3	2	1
*3.	Select the correct cutting tools for the application.	*3	2	1
*4.	Set up equipment according to established procedures.	*3	2	1
*5.	Cut metal according to specifications.	*3	2	1
*6.	Deburr material edges.	*3	2	1

### Perform Metal Forming Operations

7.	Interpret technical drawings.	3	2	1
8.	Follow established safety procedures.	3	2	1
9.	Select the correct forming tools for the application, which could include bending brakes, rolling and crimping machines.	3	2	1
10.	Form metal according to specifications.	3	2	1

### Perform Drilling Operations

11.	Interpret technical drawings.	3	2	1
*12.	Follow established safety procedures.	*3	2	1
*13.	Select the correct drill bit for the application according to the size hole required and the material being drilled.	*3	2	1
14.	Set up drill press and other drilling equipment according to established procedures.	3	2	1
15.	Drill holes in metal according to specifications.	3	2	1
16.	Deburr material edges.	3	2	1

### Perform Welding Operations

17.	Interpret welding diagrams.	3	2	1
*18.	Follow established safety procedures.	*3	2	1
19.	Distinguish between common welding processes.	3	2	1

**Perform Welding Operations (continued)**

20.	Set up welding equipment according to established procedures.	3	2	1
21.	Prepare material and joints for welding according to established procedures.	3	2	1
22.	Weld metal according to specifications.	3	2	1

**Perform Grinding Operations**

*23.	Follow established safety procedures.	*3	2	1
24.	Set up grinding equipment according to established procedures.	3	2	1
25.	Select grinding media appropriate to applications.	3	2	1
26.	Grind metal according to specifications.	3	2	1

**# of items completed with a 1 or higher rating \_\_\_\_\_ (26 required)**

**# of items completed with a 2 or higher rating \_\_\_\_\_ (21 required)**

**Note: all \* items must be completed at a 3 rating**

**Comments:** \_\_\_\_\_

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# Industrial Electricity

## RATING:

**3 = Moderately Skilled** – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)

**2 = Limited Practice** – has practiced job during training program, additional training is required to develop skill. (Entry Level)

**1 = Exposure Only** – general information provided with no practice time, close supervision needed and additional training required.

### Assist Mentor with Troubleshooting Electrical Circuits

#### Score

1.	Interpret electrical schematics.	3	2	1
*2.	Follow safety procedures.	*3	2	1
3.	Take appropriate readings on electrical circuit using meters and testing instruments.	3	2	1
4.	Assist in the process of locating and determining the cause of problems in electrical circuits.	3	2	1

### Assist Mentor with Troubleshooting Motor Control Circuits

*5.	Follow established safety procedures	*3	2	1
6.	Assist in interpreting single electric motor control diagrams.	3	2	1
7.	Assist in taking appropriate readings on motor control system using meters and testing instruments.	3	2	1
8.	Assist in locating and determining the cause of problems in motor control system.	3	2	1

\_\_\_\_\_ # of items completed with a 1 or higher rating (8 required)

\_\_\_\_\_ # of items completed with a 2 or higher rating (6 required)

**Note: all \* items must be completed at a 3 rating**

**Comments:** \_\_\_\_\_

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# Hydraulics

## RATING:

**3 = Moderately Skilled – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)**

**2 = Limited Practice – has practiced job during training program, additional training is required to develop skill. (Entry Level)**

**1 = Exposure Only – general information provided with no practice time, close supervision needed and additional training required.**

### Assist Mentor in Troubleshooting Hydraulic System

#### Score

1.	Interpret schematics for basic hydraulic system.	3	2	1
*2.	Locate manufacturer's reference materials for hydraulic components.	*3	2	1
3.	Explain the purpose and function of hydraulic components.	3	2	1
4.	Check pressure in a hydraulic system at the appropriate location.	3	2	1
5.	Identify seal, packing and gasket leakage problems.	3	2	1
6.	Match remedies with problems for inoperative systems.	3	2	1
*7.	Assist in following troubleshooting documentation procedures.	*3	2	1
*8.	Comply with safety precautions at each phase of the troubleshooting process.	*3	2	1

### Repair Hydraulic Components

*9.	Differentiate between seals, packings, and gaskets.	*3	2	1
10.	Install the seal, gasket, or packing on a component according to system specifications.	3	2	1
11.	Select proper lubricant or no lubricant as required.	3	2	1
12.	Verify the correct hydraulic fluid.	3	2	1
13.	Use procedures to avoid fluid contamination.	3	2	1
*14.	Comply with safety precautions at each phase of the repair process.	*3	2	1

### Perform Preventive Maintenance on Hydraulic Systems

*15.	Follow lock-out/tag-out and system interlock procedures.	*3	2	1
16.	Follow the steps to be performed for general maintenance of each hydraulic system component and the system as a whole.	3	2	1
*17.	Identify the frequency of the tasks i.e., (daily, every other day, weekly, monthly, yearly, etc.)	*3	2	1

\_\_\_\_\_ # of items completed with a 1 or higher rating (17 required)

\_\_\_\_\_ # of items completed with a 2 or higher rating (14 required)

**Note: all \* items must be completed at a 3 rating**

# Pneumatics

## RATING:

**3 = Moderately Skilled – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)**

**2 = Limited Practice – has practiced job during training program, additional training is required to develop skill. (Entry Level)**

**1 = Exposure Only – general information provided with no practice time, close supervision needed and additional training required.**

### Assist Mentor in Troubleshooting Pneumatic System

#### Score

1.	Interpret a schematic for a basic pneumatic circuit.	3	2	1
*2.	Locate manufacturer's reference materials for pneumatic components.	*3	2	1
3.	Explain the function of the components used in a pneumatic circuit.	3	2	1
4.	Assist with the steps necessary to troubleshoot and repair a breakdown in a pneumatic system.	3	2	1
5.	Assist in identifying all components to be checked in a pneumatic system that is operating poorly.	3	2	1
*6.	Demonstrate how and where to measure pressure in a pneumatic system.	*3	2	1
7.	Assist in listing possible causes for a fault and isolate a fault of a component in a pneumatic circuit.	3	2	1

### Service Pneumatic Conductors and Connectors

8.	Describe the use of different types of conductors and connectors for a given system.	3	2	1
9.	Assist in the install procedure for each type of common pneumatic connectors.	3	2	1

### Repair Pneumatic Conductors and Connectors

10.	Install seal, gasket, or packing on a component according to system specifications.	3	2	1
11.	Differentiate between seals, packings, and gaskets without error.	3	2	1
*12.	Select proper lubricant or o lubricant – as required.	*3	2	1
13.	Ensure components function according to specifications after servicing.	3	2	1

### Perform Preventive Maintenance on Pneumatic Systems

*14.	Follow lock-out/tag-out and system interlock procedures.	*3	2	1
15.	Follow the steps to be performed for general maintenance of each pneumatic system component and the system as a whole.	3	2	1
*16.	Identify the frequency of the tasks i.e., (daily, every other day, weekly, monthly, yearly, etc.)	*3	2	1

\_\_\_\_\_ # of items completed with a 1 or higher rating (16 required)

\_\_\_\_\_ # of items completed with a 2 or higher rating (13 required)

**Note: all \* items must be completed at a 3 rating**

# Mechanical Power Transmission, Bearings and Lubrication

## RATING:

**3 = Moderately Skilled – has performed job independently during the training program, limited additional training may be required. (Entry level skill competent)**

**2 = Limited Practice – has practiced job during training program, additional training is required to develop skill. (Entry Level)**

**1 = Exposure Only – general information provided with no practice time, close supervision needed and additional training required.**

### Assist Mentor in Troubleshooting Mechanical Drive System

#### Score

*1. Distinguish between various kinds of mechanical power transmissions.	*3	2	1
*2. Locate the major components of a mechanical drive system including v-belts, pulleys and chain drives.	*3	2	1
3. Examine components for malfunctions or wear.	3	2	1
4. Assist in determining the cause of malfunctions.	3	2	1
5. Assist in the repair or replacement of the malfunctioning component.	3	2	1
6. Apply lubrication to mechanical drive system according to specifications.	3	2	1
*7. Follow established safety procedures.	*3	2	1
8. Reference equipment manuals as needed.	3	2	1

### Analyze Different Bearing Types and Applications

*9. Identify bearing types and use.	*3	2	1
*10. Assist in analyzing the reason for failure when examining a failed bearing.	*3	2	1
*11. Match bearing numbering nomenclature to the bearing type.	*3	2	1
*12. Find the correct reference for bearing numbering.	*3	2	1

### Mount a Bearing

*13. Verify the correct bearing for the application.	*3	2	1
*14. Inspect bearing for condition and lubrication.	*3	2	1
*15. Verify mounting clearances according to specification.	*3	2	1
*16. Handle bearings properly avoiding contamination and damage.	*3	2	1
*17. Select correct tools to accomplish the job.	*3	2	1
18. Assist in removing used bearings carefully and correctly.	3	2	1
19. Assist in preparing all appropriate surfaces (the shaft and bore) as required.	3	2	1
20. Assist in mounting bearing according to specifications.	3	2	1

**Lubricate a Bearing**

*21.	Apply the proper lubrication according to specifications.	*3	2	1
*22.	Clean out old lubricant.	*3	2	1
*23.	Correctly identify bearings that do not require lubricant.	*3	2	1
*24.	Know when bearing has the correct amount of grease/lubricant.	*3	2	1

**# of items completed with a 1 or higher rating \_\_\_\_\_ (24 required)**

**# of items completed with a 2 or higher rating \_\_\_\_\_ (19 required)**

**Note: all \* items must be completed at a 3 rating**

**Comments:** \_\_\_\_\_

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## Core Abilities

## Required

Core abilities address broad knowledge, skills, and attitudes that go beyond the context of a specific course. Core abilities are not taught in specific lessons. These are the employability skills that are critical for success in all industrial industries.

### RATING:

**3 = Consistently displays this behavior**

**2 = Often displays this behavior**

**1 = Needs improvement/Rarely displays this behavior**

### Works Productively

#### Score

1. Produce work consistent with established criteria.	3	2	1
2. Attend regularly and on time	3	2	1
3. Exhibit organizational skills.	3	2	1
4. Show self-direction in starting tasks.	3	2	1
5. Demonstrate reliability.	3	2	1
6. Follow directions.	3	2	1
7. Complete required tasks on time.	3	2	1

### Acts Responsibly

8. Apply ethical work values such as keeping confidentiality, putting in a full day's work and following health and safety standards.	3	2	1
9. Accepts authority.	3	2	1
10. Informs others of developments affecting work functions.	3	2	1

### Communicates Clearly with Supervisor and Others

11. Write and speak so others can understand.	3	2	1
12. Communicate appropriately and professionally.	3	2	1
13. Use active listening skills.	3	2	1

### Thinks Critically and Creatively

14. Distinguish between fact and opinion.	3	2	1
15. Use problem-solving and decision-making strategies.	3	2	1

### Learns Effectively

16. Use resources to meet learning needs.	3	2	1
17. Organize information.	3	2	1

**Works Cooperatively with Others**

- |     |  |   |   |   |
|-----|--|---|---|---|
| 18. | Complete his/her share of tasks necessary to complete a project. | 3 | 2 | 1 |
| 19. | Maintain self-control.   | 3 | 2 | 1 |
| 20. | Accept constructive feedback.                                    | 3 | 2 | 1 |
| 21. | Resolve differences for the benefit of the team.                 | 3 | 2 | 1 |

**Works as a Team Member**

- |     |   |   |   |   |
|-----|---|---|---|---|
| 22. | Use collaborative strategies to complete tasks. | 3 | 2 | 1 |
| 23. | Exchange information, ideas, and opinions.      | 3 | 2 | 1 |
| 24. | Shows evidence of respect for diversity.        | 3 | 2 | 1 |

**Follows Written and Verbal Instructions**

- |     |   |   |   |   |
|-----|---|---|---|---|
| 25. | Listen and read carefully.                          | 3 | 2 | 1 |
| 26. | Access required information to follow instructions. | 3 | 2 | 1 |

**Total Score:** \_\_\_\_\_ ÷ 26 = \_\_\_\_\_ (average)

<b>An Average of Two (2) is required</b>
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**Comments:** \_\_\_\_\_

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Date Signed \_\_\_\_\_

## Notes

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